REMARKS

Claims 1 through 78, 80 and 81 are now pending in this application. In response to the non-final Office Action dated March 21, 2005, claims 3 through 5, 9 through 19, 21, 25, 26, 28, 29, 31, 34, 39 through 45, 47, 49 through 53, 55 through 57, 60, 61, 64, 66, 68, 69 and 76 have been amended, and claim 79 has been cancelled. Care has been taken to avoid the introduction of new matter. Favorable reconsideration of the application is respectfully solicited.

Objection has been made to claims 4-19, 21-61, 64-69, 73-77 and 79 for being dependent from multiple claims. These claims have been amended to remove multiple dependencies, and are now considered to be in proper form for examination.

Claims 1 through 3, 20, 62, 63 and 70 through 72 have been rejected under 35 U. S. C. § 102(e) as being anticipated by U.S. patent 5,960,081 (Vynne). This rejection is respectfully traversed.

Vynne describes a method of watermarking encoded digital video. It is important to note that the system and method of Vynne applies watermarks during an encoding process which utilizes motion vectors, and it is the <u>motion vectors</u> to which the watermark values are applied. As can be seen from Figure 3.3, the Vynne system outputs an encoded video system, together with a set of modified (watermarked) motion vectors.

The present invention, on the other hand, applies a watermark directly to the <u>picture sample values</u> of a picture. The output of the present invention is not compression encoded (although the output could subsequently be encoded if desired).

Column 2, lines 56 to 66, of Vynne have been relied upon for anticipating the feature of Claim 1 of "adjusting picture sample values based on watermark values".

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In fact, this passage merely states that a watermark is embedded into a video signal. It is nowhere stated that the watermark be applied to picture sample values. As noted above, Vynne instead applies the watermark to motion vectors representing the change between one picture and a subsequent picture.

Regarding the requirement of Claim 1 that each watermark value is combined with a subset of picture sample values, using a plurality of adjustment factors, the Office Action has relied upon cited column 22, lines 1-22 and column 28, lines 1-6 of Vynne. These passages refer to criteria for determining whether or not a particular motion vector is to be modified with a watermark or not. The criteria include thresholds, which may be adjusted. The criteria referred to are binary criteria and not adjustment factors as claimed in Claim 1.

Even ignoring, arguendo, the fundamental difference that Vynne does not apply watermarks to picture values (which is a significant difference), while the criteria used in Vynne for determining whether or not to watermark a particular vector is complex, the actual application of the watermark is simple – a motion vector is either incremented or decremented, as explained at column 7, lines 55-65. There is therefore no disclosure that each watermark value is combined using a plurality of adjustment factors, a yet further fundamental difference.

Considering Claim 20, again it is stressed that Vynne does not disclose a method wherein the watermark is combined with picture sample values. Furthermore, the method of combining in Vynne – that is the incrementing or decrementing of motion vectors – does not vary for different pictures.

Claim 62 concerns extraction of the watermark from a picture signal. The method of Claim 62 requires the comparison of mean picture values with reference or estimated picture values. As explained, the method of watermarking in Vynne is

fundamentally different from that of the present invention, and extraction or detection of the watermark in Vynne is similarly different, and involves performing a second motion estimation process, as explained at column 15, lines 22-53. The passage of Vynne at column 13 lines 30-32, cited in the Office Action, in fact refers to measurement of PSNR to test for possible picture degradation, and does not refer to decoding data in a picture signal. This passage certainly does not teach of determining local mean values of picture samples. Similarly, column 9, lines 36-44, refers to a subjective comparison by an observer of a watermarked motion picture with a non-watermarked motion picture, and not to decoding data.

Claim 63 requires the adding of an adjustment factor to picture values. Contrary to the assertions in the Office Action, column 28, lines 1-6 of Vynne does not teach or suggest this method step. Instead, this passage of Vynne refers to criteria for selecting whether or not a particular motion vector should be modified.

Claim 70 requires changing or moving the watermark at a shot change or following an accumulated change in picture content. Column 11, lines 15-24, of Vynne discusses in general terms attacks and other image processing techniques which a watermarked picture may be subject to. Column 33, lines 12-16, of Vynne discuss attacks which can remove the watermark. Column 17, lines 18-27, of Vynne discuss accumulation of artifacts during the first few pictures of a watermarked sequence. It is not understood how any of these passages relate to the method of Claim 70 of the present invention.

Regarding Claim 71, the cited passage of Vynne at Column 11, lines 15-24, discusses in general terms attacks and other image processing techniques which a watermarked picture may be subject to, as noted above. It is submitted that this teaching does not anticipate the method of Claim 71 of changing the data carried by

the watermark at a shot change or following an accumulated change in picture content.

The passage of Vynne at Column 11, lines 15-24, has again been used in the rejection of Claim 72. Again it submitted that this passage fails to teach or suggest the method of moving the watermark when the data content of the watermark changes.

Claim 78 has been rejected under 35 U. S. C. § 102(e) as being anticipated by U.S. patent 6,209,094 (Levine). The cited passages of Levine refer to bit shifts in a shift register and cyclic bit shifting respectively. There is no mention of an expected watermark position or of re-determining the expected position following a shot change or a change in picture content, as required by claim 78.

Claims 80 and 81 have been rejected under 35 U. S. C. § 103(a) as being obvious over Levine in view of Vynne. Both Claims 80 and 81 require the step of applying a watermark to a picture by combining watermark values with picture values. The Office Action relies on Vynne as teaching this step. As has already been shown however, Vynne does not teach or suggest this method of applying to picture values, and instead teaches embedding watermark values in motion vectors. It is submitted, therefore, that the teachings of Levine and Vynne, taken together or separately, would not have led a person of ordinary skill in the art to modify the prior art as proposed in the Office Action.

In summary, it is submitted that all rejections of record have been overcome and should be withdrawn. Allowance of the application is respectfully solicited. To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of

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this paper, including extension of time fees, to Deposit Account 500417 and please

credit any excess fees to such deposit account.

Respectfully submitted,

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Date: June 21, 2005